

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

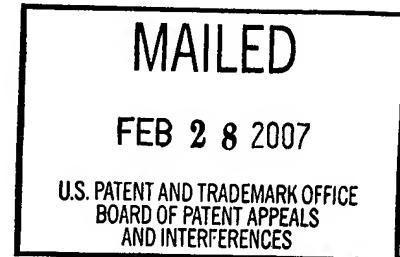
## UNITED STATES PATENT AND TRADEMARK OFFICE

### BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte THOMAS N. MASTERS

Appeal No. 2007-0182  
Application No. 10/088,538

ON BRIEF



Before ADAMS, MILLS, and GRIMES, Administrative Patent Judges.

ADAMS, Administrative Patent Judge.

### DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 6, 7, and 9-14, which are all the claims pending in the application.

Claim 11 is illustrative of the subject matter on appeal and is reproduced below:

11. A medicament for preserving and storing a heart while awaiting transplantation consisting essentially of:
  - (a) a balanced isotonic solution in a physiologically acceptable amount;
  - (b) cyclosporin A in an amount from about 2.5  $\mu$ M to about 10  $\mu$ M per liter of solution;and
  - (c) the remaining being water, whereby said heart awaiting transplantation is preserved for up to 24 hours.

The references relied upon by the Examiner are:

Raymond 5,693,462 Dec. 2, 1997

Massoudy et al. (Massoudy), "Cardioprotection by Cyclosporine A in Experimental Ischemia and Reperfusion – Evidence for a Nitric Oxide-dependent Mechanism Mediated by Endothelin," J. Mol. Cell. Cardiol., Vol. 29, pp. 535-544 (1997)

### GROUND OF REJECTION

Claims 6, 7, and 9-14 stand rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Massoudy and Raymond.

We reverse.

### DISCUSSION

Appellant's claims are drawn to a composition (claims 11-14), or method of using a composition (claims 6, 7, 9, and 10) consisting essentially of:

- (a) balanced isotonic solution in a physiologically acceptable amount (e.g., Krebs-Henseleit-bicarbonate buffer);
- (b) cyclosporin A in an amount from about 2.5  $\mu$ M to about 10  $\mu$ M per liter of solution; and
- (c) water.

There is no dispute on this record that Massoudy teaches a composition comprising cyclosporin A in Krebs-Henseleit-bicarbonate buffer with water<sup>1</sup>.

Answer, page 3. It is also undisputed on this record that the prior art fails to

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<sup>1</sup> The Examiner relies on Raymond to teach that Krebs-Henseleit buffer is a "balanced isotonic solution in a physiologically acceptable amount." Answer, page 3 and bridging paragraph, pages 4-5. See also Appellant's specification (page 6), wherein Appellant confirms that Krebs-Henseleit-bicarbonate buffer is a well known "balanced isotonic solution in a physiological acceptable amount."

teach a composition with a cyclosporin concentration of about 2.5  $\mu\text{M}$  to about 10  $\mu\text{M}$  per liter of solution.<sup>2</sup> Id. As Appellant points out, the concentration of cyclosporin A required by the claimed invention “is at least three times the amount of cyclosporin A disclosed in Massoudy . . . .” Brief, page 4.

To make up for this three-fold difference in cyclosporin concentration, the Examiner asserts that since Massoudy teaches the “general conditions” of Appellant’s claimed invention the claimed cyclosporin A concentration would have been obvious to a person of ordinary skill in the art at the time the invention was made. Answer, page 3. According to the Examiner (id.), “it is not inventive to discover the optimum or workable ranges by routine experimentation.” In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). We agree that Aller sets out the general rule that the discovery of an optimum value of a result effective variable in a known process is normally obvious. See also In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980) (“discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.”) We disagree, however, that Aller supports the Examiner’s *prima facie* case of obviousness on this record.

Massoudy teaches that cyclosporin A is used as an immunosuppressive in organ transplantation, and is administered “either before, with or shortly after the beginning of cardiac reperfusion following heart transplantation, [where] its influence on the reperfused heart may have a hemodynamic – possibly endothelin-mediated – aspect beyond its immunosuppressive action.”

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<sup>2</sup> While Raymond discloses a solution for storing an organ awaiting transplantation, Raymond does not teach a composition comprising cyclosporin A.

Massoudy, page 536, column 1. To address the influence cyclosporin has on the reperfused heart Massoudy “performed experiments on isolated guinea-pig hearts undergoing short-term ischemia and reperfusion.” Id. According to Massoudy, “the concentrations [(0.08µM and 0.8µM)] chosen in this study are very close to the reference [plasma] levels [required] in patients treated with CsA [(cyclosporin A) after heart transplantation].” Massoudy, page 537, bridging paragraph, columns 1-2. Massoudy reports that “[t]he presence of 0.8 µM cyclosporin[ ] A prevented loss of post-ischemic cardiac function significantly, whereas the lower concentration of CsA (0.08 µM) was without protective effect.” Massoudy, page 539, column 2.

Appellant explains that the reason the claimed cyclosporin concentration differs from that used by Massoudy is because Massoudy used a cyclosporin A concentration that is consistent with its use in patients after implantation<sup>3</sup>, rather than a concentration that is useful for preserving a heart awaiting transplantation as is required by Appellant’s claimed invention. We agree. As discussed above, Massoudy’s study was directed at elaborating the “influence of cyclosporin on the reperfused heart . . .” (Massoudy, page 536, column 1), not the effects of cyclosporin A on a heart awaiting transplantation. Therefore, while Massoudy teaches a composition that is similar to that set forth in Appellant’s claims, it cannot be said that Massoudy teaches the “general conditions” of Appellant’s claimed invention. Accordingly, we disagree with the Examiner’s assertion that it would have been *prima facie* obvious to “optimize” the concentration of

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<sup>3</sup> See Massoudy, page 537, bridging paragraph, columns 1-2.

cyclosporin A as taught by Massoudy to arrive at the composition set forth in Appellant's claimed invention.

For clarity, while Massoudy does speak of "isolated hearts"<sup>4</sup>, Appellant correctly asserts that Massoudy does not address the use of a composition comprising cyclosporin A for storage or preserving a heart awaiting transplantation. Brief, page 4. To the contrary, Massoudy's study is directed to addressing the influence cyclosporine has on the reperfused heart in a model using isolated hearts undergoing short-term ischemia and reperfusion. Massoudy, page 536, column 1. Accordingly, while it may have been obvious to determine the optimum values of cyclosporin A in such an experimental model, we find no evidence that a person of ordinary skill in the art would step outside the concentration range used by patients undergoing cyclosporin A therapy to utilize a three-fold higher amount of cyclosporin A in Massoudy's experimental model. To emphasize this point we note that Massoudy is careful to use cyclosporin A concentrations, which are "very close to the reference levels in patients treated with . . . [cyclosporin A]." Therefore, we are not persuaded by the Examiner's assertion that the cyclosporin A concentrations used by Massoudy were experimental examples, which a person of ordinary skill in the art "would not recognize . . . as limitations on the concentrations useful in the preparation of a composition for the preservation of a heart." To the contrary, Massoudy does not speak to the preservation of a heart, or the use of a

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<sup>4</sup> See e.g., Answer, page 5, wherein the Examiner finds Massoudy "teaches the use of cyclosporin A as a cardioprotective agent in ischemia and reperfusion in isolated hearts (p. 536, col. 2, p. [ ]539, col[. ]2)."

cyclosporin A concentration that is outside of the concentration used to treat patients. Raymond does not teach the use of cyclosporin A and therefore fails to make up for the deficiencies of Massoudy.

On reflection, it is our opinion that a person of ordinary skill in the art at the time invention was made would not have found it prima facie obvious to "optimize" the concentration of cyclosporin A in Massoudy's composition in the manner necessary to arrive at the composition set forth in Appellant's claimed invention. Accordingly, we reverse the rejection of claims 6, 7, and 9-14 under 35 U.S.C. § 103 as being unpatentable over the combination of Massoudy and Raymond.

REVERSED

  
Donald E. Adams )  
Administrative Patent Judge )  
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Demetra J. Mills ) BOARD OF PATENT  
Administrative Patent Judge )  
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Eric Grimes ) APPEALS AND  
Administrative Patent Judge ) INTERFERENCES  
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